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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/760,614	01/20/2004	Torbjorn Randahl	1406/179	9961

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3100 TOWER BLVD
SUITE 1400
DURHAM, NC 27707

EXAMINER	
NGUYEN, LINH V	

ART UNIT	PAPER NUMBER
2819	

DATE MAILED: 06/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/760,614	RANDAHL ET AL.	
	Examiner	Art Unit	
	Linh V. Nguyen	2819	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to application 10/757,400 filed on 1/15/04. Claims 1 - 14 pending on this application.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 1, 2, 8, 9, and 12 - 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Cripe U.S. patent No. 5,327,337.

Regarding claim 1, Fig. 1 of Cripe disclose a line driver arrangement comprising: a class-D switching amplifier (Col. 5 lines 43 – 45) having a switching frequency (Q1, Q2), said class-D amplifier receiving an input transmit signal (1) and outputting an amplified transmit signal; a transformer (T1) having a predetermined leakage

inductance (L1) for receiving the amplified transmit signal and outputting a transformed signal as an output transmit signal (output signal from secondary winding of T1); wherein the leakage inductance predetermined for low pass filtering of the amplified transmit signal (Col. 5 lines 3 – 4).

Regarding claim 2 wherein the leakage inductance is predetermined to minimize a resonance at a resonance frequency in the power spectral density of the line driver arrangement, wherein the resonance is caused by the switching frequency of the class-D amplifier (Col. 2 lines 23 – 35).

Regarding claim 8, wherein the transformer (T1) further has a stray capacitance (C1, C2) that is predetermined to minimize the resonance in the power spectral density of the line driver arrangement (Col. 2 lines 23 – 35).

Regarding claim 9, wherein low pass filter (L1, C1, C2, Col.5 line 4) is coupled between the class-D amplifier (1, Q1, Q2) and the transformer (T1).

Regarding claim 12, wherein the line driver (Figure of disclosure) arrangement further comprises resistances (R1, L2) and/or inductances.

Regarding claims 13 and 14, the claim incorporated substantially the same subject matter as of claims 1 and 8, and rejected along the same rationale.

5. Claims 1, 3, 9, 11, and 12 - 14 are rejected under 35 U.S.C. 102(a) as being anticipate by Ramage et al. Pub.No.: US 2003/0095000 A1.

Regarding claim 1, Fig. 1 of Ramage et al. disclose a line driver arrangement comprising: a class-D switching amplifier (page 3 paragraph 0027) having a switching

frequency (20, 21), said class-D amplifier receiving an input transmit signal (18, 19) and outputting an amplified transmit signal (28, 29); a transformer (30) having a predetermined leakage inductance for receiving the amplified transmit signal (28, 29) and outputting a transformed signal as an output transmit signal (31); wherein the leakage inductance (30) predetermined for low pass filtering (22, 23, 26, 27) of the amplified transmit signal (paragraph 0030).

Regarding claim 3, wherein the signals are dual line signals (18, 19), the class-D amplifier and the transformer (30) each have two input terminals and two output terminals and are connected in series through a dual line (28, 29).

Regarding claim 9, wherein low pass filter (22, 23, 26, 27) is coupled between the class-D amplifier (20, 21) and the transformer (30).

Regarding claim 11, Ramage et al. does not explicitly disclose the dual line driver (Fig. 1) of his is part of an ADSL transceiver. It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employ does not differentiate the claimed apparatus from prior art apparatus satisfying the claimed structural limitations.

Regarding claim 12, wherein the line driver arrangement further comprises resistances and/or inductances (22, 23).

Regarding claim 13, Fig. 1 of Ramage et al. discloses a transformer for use in a line driver arrangement, said line driver arrangement comprising an amplifier (20, 21) for receiving an input transmit signal (18, 19) and outputting an amplified transmit signal (28, 29) and wherein the transformer has a predetermined leakage inductance and/or

stray capacitance (22, 23, 26, 27), and the leakage inductance and/or stray capacitance is predetermined for low pass filtering of the amplified transmit signal (Page 3 paragraph 0030).

Regarding claim 14, wherein the amplifier is a class-D switching amplifier (20, 21) having a switching frequency (abstract).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramage et al. as applied to claims 1 and 3 above, and further in view of Applicant Admitted Prior Art (AAPA).

Ramage et al. as applied to claims 1 and 3 above, does not explicitly disclose the line driver (Fig. 1) of his having a power spectral density that complies with ADSL standard.

AAPA, under Background, on page 1 lines 5 – 7, and on page 2 lines 1 – 24, discloses a line driver arrangement utilizing class D power amplifier having a power spectral density that complies with ADSL standard.

Ramage et al. and AAPA are common subject matter for line driver arrangement utilizing class D amplifier. Therefore it would have been obvious to one having ordinary

skill in the art at the time the invention was made to incorporated the teaching class D of AAPA into Class D of Ramage et al. for the purpose of fulfill certain requirements of ADSL standard of line driver (AAPA, page 2 lines 1 – 5) and providing a guidelines for design and implementation of a DSS technology (AAPA, page 2, lines 23- 24).

8. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramage et al. as applied to claims 1, and further in view of Siao U.S. Patent No. 6,091,206.

Ramage et al. as applied to claim 1 above, does not discloses two capacitances are connected in series between the two lines between the class-D amplifier and the transformer, and wherein a node between the two capacitances is connected to a reference voltage.

Fig. 1 of Siao discloses a class D line driver having two capacitances (C1, C2) is connected in series between the two lines between the class-D amplifier and the transformer, and wherein a node between the two capacitances is connected to a reference voltage (Ground potential).

Ramage et al. and Siao are common subject matter for class D driver. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporated the teaching of Siao into Ramage et al. for the purpose of determine the operating frequency range and also serve to protect the switching transistors by providing AC impedance when subject to high frequency transient signals or voltage spikes (Siao, page 2 line 64 – page 3 line 5).

9. Claim 7 is are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramage et al. modified by Siao as applied to claim 5 above, and further in view of Miyajima et al. Pub. No.: 2003/0042801.

Ramage as applied to claim 5 above does not explicitly disclose the low pass filter (22; 23, 26, 27 in Fig. 1) of his having a cutoff frequency that is lower than the resonance frequency.

Paragraph [0109] of Miyajima et al. teaches the low pass filter having a cutoff frequency that is lower than the resonance frequency.

Ramage et al. and Miyajima et al. are common subject matter for low pass filter. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporated the low pass filter of Miyajima into Ramage for the purpose of preventing the ripple output (Miyajima, paragraph 0019).

Prior Art

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Contact Information

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Linh Van Nguyen whose telephone number is (571) 272-1810. The examiner can normally be reached from 8:30 – 5:00 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Michael Tokar can be reached at (571) 272-1812. The fax phone numbers for the organization where this application or proceeding is assigned are (703-872-9306) for regular communications and (703-872-9306) for After Final communications.

6/2/05

Linh Van Nguyen

Art Unit 2819